

There have been 2 hypotheses on the speciation process of the Izu Island Thrush. One is that the species differentiated through geographic isolation from the main-island Brown Thrush *T. chrysolaus* (Fujimura 1948). The other is that the Izu Island Thrush is a relic species that was distributed more extensively in the past and retreated thereafter into island refuges (Yamashina 1942). Yamashina considered that *T. celaenops* is more closely related to the Black-breasted Thrush *T. dissimilis* in South-East Asia than to *T. chrysolaus*. The fact that the Izu Island Thrush breeds in the distant Tokara Islands possibly suggests that the relic hypothesis is more reasonable.

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*Addresses:* N. Kawaji, Forestry and Forest Products Research Institute, P.O. Box 16. Tsukuba Norin Kenkyu Danchi-nai, Ibaraki, 305 Japan (present address: Forestry Research Institute, 1 Hitsujigaoka, Tohohira-ku, Sapporo City, Hokkaido 004, Japan); H. Higuchi, Research Center, Wild Bird Society of Japan, Higashi 2–24–5, Shibuya-ku, Tokyo, 150 Japan; H. Hori, Laboratory of Silviculture, Faculty of Agriculture, Kagoshima University, Kagoshima, 890 Japan.

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## A review of the genera *Calandrella*, *Spizocorys* and *Eremalauda* (Alaudidae)

by W. R. J. Dean

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One of the recurrent problems in the systematics of African larks is the question of what species compose the genus *Calandrella* Kaup 1829, and

whether *Spizocorys* Sundevall 1872 constitutes a natural group. Meinertzhagen (1951) grouped 9 species in *Calandrella*. This arrangement was followed (in the main) by Hall & Moreau (1970), who included the anomalous *Eremalauda dunni* in *Calandrella*, within a species-group that contained *C. obbiensis* and *C. personata*. Maclean (1969) separated a group of 3 southern African species from *Calandrella*, placing them in *Spizocorys*, and removed one further species (*starki*) from *Calandrella*, placing it in *Alauda* L. 1758. A recent checklist of the birds of the world (Wolters 1975–82) contains a number of novelties, among them *Calandrella blanfordi*, *erlangeri* and *cheelensis* elevated to specific level, *obbiensis* placed in *Ammomanes* Cabanis 1851 and *Botha Shelley* 1902 resurrected for *Spizocorys fringillaris*.

In the present paper *brachydactyla*, *cinerea*, *acutirostris*, *rufescens*, *somalica*, *raytal*, *conirostris*, *sclateri*, *fringillaris*, *obbiensis*, *personata*, *starki* and *dunni* are considered to be full species. A characteristic common to this group of species is that they are all mainly granivorous (Dean in prep.) and all drink water regularly.

The type of *Calandrella* is *C. brachydactyla* and the genus was originally separated on the reduced outer primary, pointed wing, dark square tail, usually with white outer rectrices, short, strong bill, and nostrils concealed by bristles or plumulets. Some species in the group have rufous on the crown and on the sides of the chest. The type of *Spizocorys* is *S. conirostris* (Sundevall), and the genus was separated from *Calandrella* on the basis of the short, conical bill. The shape of the bill in larks is an adaptive, plastic character, and of limited use as a taxonomic character. Similarly, plumage colour is adaptive, but plumage pattern may be less subject to selective pressures. Length of 1st primary, on which many genera in the Alaudidae have been separated, has apparently some value as a taxonomic character, but length of the 1st primary does vary in relation to the roundness of the wing in larks—round wings relatively speaking having the longest 1st primary (Harrison 1966).

Maclean (1969) separated *cinerea* from *conirostris*, *sclateri* and *fringillaris* on the lack of homogeneity in plumage pattern, call, nest and, to some extent, display. Because he considered *starki* sufficiently different from the *Spizocorys* group, and similar to *Alauda*, Maclean (1969) placed *starki* in *Alauda*. Display, song-flight and call may provide clues to possible relationships in the *Calandrella* (*sensu latu*) group. Songs and displays may be broadly classified as 'simple' or 'complex'. Simple songs are 3–5 note refrains, given in flight or on the ground, and usually also include the 'courtship song'; song-flight is weakly developed or non-existent. Complex songs have more elements; usually they have an introductory phrase or phrases, followed by a main song which may include mimicry of other species and other calls; song-flight is well developed.

Nest architecture in Alaudidae appears to be an important differentiating characteristic; the presence of a built-up ramp of small stones or mud flakes, or an apron of nesting material extending out from the rim of the cup, or the absence of either a ramp or an apron, may characterize genera.

A summary of species characteristics is given in Appendix 1.

TABLE 1

Morphological, behavioural and biological characteristics of the *Calandrella* species group (*sensu* Hall & Moreau 1970)

Species	Plumage below	Face	Display	Nest
<i>brachydactyla</i>	shoulder patch	plain	complex	open, with ramp
<i>cinerea</i>	shoulder patch	plain	complex	open, with ramp
<i>acutirostris</i>	shoulder patch	plain	complex	open, with ramp
<i>rufescens</i>	chest band	plain	complex	open, ramp?
<i>somalica</i>	lightly streaked	plain	complex?	open, ramp?
<i>raytal</i>	lightly streaked	plain	complex	open, ramp?
<i>conirostris</i>	lightly streaked	patterned	simple	open, with apron
<i>sclateri</i>	lightly streaked	patterned	simple	open, with apron
<i>fringillaris</i>	heavily streaked	patterned	simple	open, with apron
<i>obbiensis</i>	heavily streaked	patterned	simple?	open, with apron
<i>personata</i>	lightly streaked	patterned	simple?	open, apron?
<i>starki</i>	lightly streaked	patterned, pale eye-ring	complex	open, lacks ramp or apron
<i>dunni</i>	streaked	patterned, pale eye-ring	complex	open, lacks ramp or apron

#### PROPOSED TAXONOMIC GROUPING

On the basis of shared characters (Table 1), specifically facial pattern, flight display and nest architecture, the following groups are separable:

**Group 1:** plumage brown, streaked above, bill brown to black, face plain, chest band or shoulder patches below, complex flight display, nest usually with ramp = *Calandrella*.

**Group 2:** plumage pale rufous-brown to greyish-brown, streaked above and below, bill pink, pinkish-brown or light brown, face patterned, simple flight display, nest with apron = *Spizocorys*.

**Group 3:** plumage buffy to pale brown, streaked above, bill whitish-horn or yellowish-white, face patterned, pale eye-ring, streaked below, complex flight display but song simple, nest without ramp or apron = *Eremalauda* Sclater 1926.

The following arrangement is then possible:

<i>Calandrella</i>	<i>Spizocorys</i>	<i>Eremalauda</i>
- <i>brachydactyla</i>	- <i>conirostris</i>	- <i>starki</i>
- <i>cinerea</i>	- <i>sclateri</i>	- <i>dunni</i>
- <i>acutirostris</i>	- <i>fringillaris</i>	
- <i>rufescens</i>	- <i>obbiensis</i>	
- <i>somalica</i>	- <i>personata</i>	
- <i>raytal</i>		

Most workers concur that *Calandrella brachydactyla*, *C. acutirostris*, *C. cinerea*, *C. somalica*, *C. rufescens* and *C. raytal* form a closely related group, since *brachydactyla*, *acutirostris*, *cinerea* and *somalica* have at one time or another been considered races of *brachydactyla* or races of *cinerea* (Peters 1960). Meinertzhagen (1951) considered *somalica* and *raytal* to be races of *rufescens*.

Similarly, several workers have grouped *S. conirostris*, *S. sclateri* and *S. fringillaris*, sometimes including *starki* in the group (e.g. McLachlan & Liversidge 1978). Maclean (1969) considered *starki* distinct from both *Calandrella (cinerea)* and the *Spizocorys* group. Recently, Clancey *et al.*

(1987) decided against the treatment of *starki* as a member of the Eurasian skylark assemblage (*Alauda arvensis* and *A. gulgula*). A novelty proposed in the present paper is the linking of *dunni* with *starki*, suggested by the similarity in flight display, facial and general plumage patterns and nest.

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*Address:* W. R. J. Dean, Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch, South Africa, 7700.

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#### APPENDIX 1

#### Summary of main characteristics of *Calandrella*, *Spizocorys* and *Eremalauda* species

##### 1. *C. brachydactyla*.

*Plumage:* streaked on back, below lacks streaking on chest, but has small dark patch at shoulder. *Face* not patterned. *Bill:* horn-brown upper mandible, pale horn lower. *Legs and feet* flesh brown. *Song* is complex: call in song-flight begins with introductory 'dip dip . . .', not infrequently interspersed with mimicry of other species' calls, given as the bird ascends steeply in flight on rapidly beating wings to 8–15 m; introductory notes give way to main song, a series of 10–20 (up to 60 recorded) phrases, each phrase 8–10 units, repeated

persistent at short intervals. On final note of song-phrase, closes wings and descends, but before reaching ground beats wings to effect slower descent, drops down and then beats wings in order to begin major ascent again, repeating the sequence of song. Song-flight is thus a series of deep undulations, but interspersed with shallow ones. *The nest* is a cup of grass and other dry vegetation, lined with softer material, frequently surrounded by a ramp of lumps of soil or small stones (Cramp 1988).

#### 2. *C. cinerea*.

*Plumage*: streaked on back, plain below except for rufous patches on sides of chest. *Face* not patterned. *Bill* black. *Legs and feet* dark brown. *Song* is complex with a song-flight similar to *brachydactyla*, but remaining longer in the air. Has similar undulations in flight. *The nest* is a cup of dry grass lined with finer material, placed in a scrape in the ground against a tuft, shrub, stone or large clod of earth, with a ramp of small stones or lumps of soil present on the open side of the nest (data from Dean, in prep.).

#### 3. *C. acutirostris*.

*Plumage*: streaked, and generally very similar to *brachydactyla*. *Face* not patterned. *Bill* yellowish-horn, blackish on edges and tip. *Legs and feet* flesh brown. *Song* is complex: display similar to *brachydactyla* and *cinerea*. *The nest* is a cup of dry grass, lined with soft material, frequently with a ramp of small stones around the rim (data from Ali & Ripley 1983).

#### 4. *C. rufescens*.

*Plumage*: heavily streaked above, below streaking on chest forming a distinct pectoral band. *Face* not patterned. *Bill* horn-grey. *Legs and feet* flesh brown. *Song* is complex: display similar to *brachydactyla*, but has a greater repertoire of phrases and mimics songs and calls of other larks, including *brachydactyla*. *The nest* is a cup of dry grass placed in a scrape. No data available on ramp or surround (Cramp 1988).

#### 5. *C. somalica*.

*Plumage*: streaked above, below whitish, chest tinged pale buff and streaked lightly with dark brown. *Face* not patterned. *Bill* reddish. *Song and display* apparently similar to *cinerea*. *The nest* is an open cup of grass placed in a scrape in the ground (data from Archer & Godman 1961).

#### 6. *C. ruytai*.

*Plumage*: lightly streaked above, below whitish, with indistinct streaking on sides of chest. *Face* not patterned. *Bill* horn-grey, horn-brown to blackish. *Legs and feet* flesh brown. *Song-flight* is complex; has an undulating aerial display flight similar to *rufescens* and raises a crest when singing. *Song* is interspersed with mimicry of other species' calls. *The nest* is a cup of dry grass, placed in a scrape, lined with soft material. No data on ramp or surround (data from Ali & Ripley 1983).

#### 7. *S. conirostris*.

*Plumage*: streaked above, below rufous, lightly streaked on chest. *Face* patterned. *Bill* pink. *Legs and feet* pink. *Song* is simple: consists of 2–3 notes, 'si si si' given in flight. No flight display. *The nest* is a cup of grass placed in a scrape in the ground, with an apron of grass extending out from the rim (data from Maclean 1970).

#### 8. *S. sclateri*.

*Plumage*: streaked above, below buffy to rufous buff, streaked on chest. *Face* boldly patterned, with dark mark below eye. *Bill* brownish-pink. *Legs and feet* light brown. *Song* consists of 3 notes, 'trit trit trit' given in flight. No flight display. *The nest* is a cup of grass with an apron, placed in a scrape in the ground (data from Hockey & Sinclair 1981, J. C. Sinclair, W.R.J.D.).

#### 9. *S. fringillaris*.

*Plumage*: heavily streaked above, below buffy, heavily streaked on chest and flanks. *Face* patterned. *Bill* pink. *Legs and feet* pink. *Song* is simple: 2–3 element call 'chiree' repeated several times, given in flight or on ground. No flight display. *The nest* is a cup of dry grass with an apron, placed in a scrape in ground (data from Allan *et al.* 1981).

#### 10. *S. obbiensis*.

*Plumage*: streaked above, below greyish, streaked on chest and flanks. *Face* patterned. *Bill* pinkish-brown. *Legs and feet* pale brown. *Song* is simple, a 'tip tip' flight call. No flight display in this species was observed by J. S. Ash in a brief study of breeding. *The nest* is a cup in a scrape in the ground (data from Ash 1981 and J. S. Ash).

11. *S. personata*.

*Plumage*: lightly streaked and mottled on back, below plain grey-brown on chest, rufous on belly. *Face* boldly patterned with black, forming a mask. *Bill* yellowish-horn. *Legs and feet* flesh white (data from Dean, in prep.).

12. *E. starki*.

*Plumage*: streaked above, below whitish, plain or lightly streaked. *Face* not patterned, but has bold white eye-ring. *Bill* whitish-horn. *Legs and feet* pinkish-white. *Song-flight* is complex: ascends into the air singing a simple mellow song 'prrr prrr preee preee prrr prrr preee preee . . .' until it reaches a height of 6–10 m (even up to 200 m according to Willoughby 1971), where it continues to sing for several minutes as it hovers into the wind before dropping straight down to the ground. *The nest* is a cup of grass in a scrape, lacking both apron and ramp (data from Maclean 1970, Willoughby 1971).

13. *E. dunni*.

*Plumage*: lightly streaked on back, almost plain, whitish below, streaked dark on chest. *Face* boldly patterned, with dark brown to black moustachial and malar stripes and surround to cheeks, and white eye-ring. *Bill* yellowish-white. *Legs and feet* pale flesh. *Song-flight* is complex: rises into the wind to height of 30–50 m, and sings while remaining more or less in one place, swinging from side to side with slow, lazy wing-beats, effecting a floppy appearance. At end of song-flight it drops to the ground. The song is a series of short rambling phrases, given both in song-flight and on the ground. *The nest* is a scrape lined with fresh vegetation (data from de Naurois 1974, Cramp 1988).

## Weights of birds collected in the Mutare Municipal Area, Zimbabwe

by H. D. Jackson

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The Mutare Municipal Area, occupying c. 158 km<sup>2</sup>, extends from c. 18°56' to 19°02'S, and from c. 32°32' to 32°42'E, so adjoining the Mozambique border. Altitude varies from c. 915 to 1740 m a.s.l. and there is a diversity of habitat ranging from moist montane evergreen forest in the northeast to dry *Acacia* thornveld in the southwest. The Mutare Museum has been conducting an avifaunal survey of this area, the results being reported in a series of papers by Jackson (1972, 1976, 1986, 1987a, 1987b, 1988).

Most of the birds collected were weighed on a triple-beam balance, usually to the nearest decigram. This paper provides a synthesis of the weight data, obtained from 2809 individuals of 209 species. Maclean (1985) gives no weights for 31 (\*\*) of these species and less than 10 weights each for another 59 (\*).

Mutare mean weights tend to be lighter than those given by Maclean (1985) for the whole of southern Africa, often more than 10% lighter (<), sometimes more than 25% so (≪). This is in agreement with Bergmann's Rule that, among the forms of a polytypic species, body-size tends to be larger in cooler parts of the total range and smaller in the warmer parts (Thomson 1964). Weight data in Maclean (1985) are unfortunately lumped geographically, except for the following species, all of which support Bergmann's Rule (mean weights in grams):

*Anas smithii*: Cape ♂♂ 688, ♀♀ 598; Transvaal ♂♂ 603, ♀♀ 572

*Charadrius pecuarius*: Cape 42.6; Transvaal 34